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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/657,901

09/09/2003

Mukul Saran

TI-26609

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04/06/2005

TEXAS INSTRUMENTS INCORPORATED

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EXAMINER

CHU, CHRIS C

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/657,901

Applicant(s)

SARAN ET AL.

Examiner

Chris C. Chu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) 3 - 13 and 18 - 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 14 - 17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species I (Figs. 5a and 5b) in the reply filed on January 14, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Applicant elected claims 1 – 3, 7, 8, 12 and 14 – 18. However, a quick review of Figs. 5a and 5b clearly shows that claims 3, 7, 8, 12 and 18 do not read on Species I. Therefore, claims 3, 7, 8, 12 and 18 have been treated as a non-elected Species and are hereby withdrawn from consideration consistent with the election filed on January 14, 2005 as addressed above.
 - (A) In claim 3, the limitation “wherein said depressions comprise trenches at the surface of said die in a dielectric layer” does not read on Figs. 5a and 5b.
 - (B) In claim 7, the limitation “a trench in said stack through at least one of said dielectric layers” does not read on Figs. 5a and 5b.
 - (C) In claims 8 and 12, these claims are dependent claims of claim 7, which contains a limitation that does not read on Figs. 5a and 5b.
 - (D) In claim 18, the limitation “further comprising a trench in a surface of said die, wherein said mold compound fills said trench” does not read on Figs. 5a and 5b.

Drawings

3. Figure 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because:
 - (A) Reference character "116" in Figs. 1 and 2 has been used to designate both solder balls in page 7, line 3 and conductive traces in page 7, line 5.
 - (B) Reference character "602" in Fig. 6a has been used to designate both metal columns in page 10, line 8 and metal frames in page 10, line 23.
5. The drawings are objected to as failing to comply with 37 CFR 1.84(h)(3) because: Fig. 5b fails to show the full extent between the arrows of Fig. 5a.
6. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: the reference numbers "120" in Fig. 3b and "703" in Fig. 7d are not referenced in the specification of the instant invention.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, it is unclear what the applicant regards as "a die having ... corners separated by edges".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 2 and 14 – 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Misawa et al. (U. S. Pat. No. 6,150,725).

Regarding claim 1, Misawa et al. discloses in Fig. 4 and Fig. 5(b) a packaged integrated circuit, comprising:

- a die (1; column 4, line 35) having a surface and corners separated by edges (see Fig. 4), said die surface including depressions (3; column 5, lines 32 – 33); and
- mold compound (since the elements 121 and 118 encapsulate the chip surface, the elements 121 and 118 read as a mold compound; column 6, lines 18 – 63) covering said die surface and filling said depressions (see Fig. 5(b)).

Regarding claim 2, Misawa et al. discloses in Fig. 4 and Fig. 5(b) said die (1) comprising bond pads (2, 3 and 113; column 5, line 9), and further wherein said depressions (3) comprise slots in said bond pads (see Fig. 5(b)).

Regarding claim 14, Misawa et al. discloses in Fig. 4 and Fig. 5(b) a packaged integrated circuit, comprising:

- a die (1; column 4, line 35) including bond pads (2, 3 and 113; column 5, line 9),
- wherein each of said bond pads (2, 3 and 113) comprise
 - o a central bonding region (113) and
 - o a peripheral region (2 and 3),
 - o said peripheral region (2 and 3) comprising at least one slot (3; column 5, lines 32 – 33).

Regarding claim 15, Misawa et al. discloses in Fig. 4 and Fig. 5(b) a passivating dielectric layer (120; column 5, lines 38 – 51) over said die (1), said passivating dielectric layer (120) conformally covering said bond pad and said slots (see Fig. 5(b)).

Regarding claims 16 and 17, Misawa et al. discloses in Fig. 4 and Fig. 5(b) mold compound (121 and 118) covering said die and filling said slots (see Fig. 5(b)).

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Loo et al., Nakane, Huang et al., Chuang, Goel et al., Masumoto et al., Matsubara, Akagawa, Ori, and Shimizu et al. disclose pads that have at least one slot or hole in it.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is 571-272-1724. The examiner can normally be reached on 11:30 - 8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 517-272-1664. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>.

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Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Chris C. Chu
Examiner
Art Unit 2815

C.C.
Monday, March 28, 2005


GEORGE ECKERT
PRIMARY EXAMINER